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## THE REQUISITES OF A NATIONAL FOOD POLICY

### I. THE NATURE OF THE PROBLEM

It is a commonplace that wars require the efforts of all the people of the nations involved. The effective prosecution of so unusual a business necessitates the use of old and young, of man and woman; of brawn and brain, of habit and nerve cell; its success is contingent upon an organization of the bewildering variety of tasks which make up the industrial life of a nation into an articulate system which has a single objective. The army which engages an enemy three thousand miles from home is the cutting edge of a vast and gigantic machine which ramifies unto the utmost confines of the land and apportions tasks to all sorts and conditions of men. To push to success the military program, or even to frustrate the designs of the enemy, the fighting force must be fed, clothed, sheltered, and provided with a minimum of amusement and recreation. It must also be supplied with a countless number of instruments and materials which the machine-technique has made essential to modern arms. This supply must be adequate and continuous; it must be adapted to the exigencies of military strategy; its elements must be in proper proportion to each other. Further, the number of men sent to the front must be as large as can be withdrawn from industry and maintained there and the materials supplied must attain the nation's maximum.

This industrial problem of the organization of supplies is an aspect of the larger problem of general strategy. The aggregate of supplies required, its resolution into its various component commodities, and the problem of securing these are all dependent upon the larger military purpose. Yet at first blush the problem seems simple. One's experience in business, large or small, tells him that money is the indispensable means to the goods he craves. If he possess it, he can have even unto abundance; if he has it not, he must go empty and void. By analogy he concludes that money will of itself enable the government to supply its many and varied

wants and he tucks the enigmas of supply away within the confines of the perplexing problem of war finance. But further consideration shows that money is not the thing which is needed; that, since even to the wise the way of expenditure may be the road to folly, it is at best a very uncertain means to an end. Moreover it shows that in at least two very important respects the nation's needs are unlike yours or mine: first, it requires goods in unprecedentedly large quantities, and secondly, it demands many goods which the market does not supply. It asks of the industrial system what it has not been in the habit of furnishing.

But, in spite of the volume and novelty of the demand, many think that by ordinary purchase supplies can be obtained. They know that supplies of goods are constantly being increased to meet new demands; they know that new products are constantly being offered when the market is ready for them; they know that these things happen without collective thought on the part of society or collusion by the officers of the state. So they conclude that by bidding high enough the government can persuade private enterprisers to turn out the goods which it requires. Perhaps eventually the requisite supplies might be obtained in this way. But it is a way beset not only with difficulties but with national peril. It involves an unnecessarily high expense, for very high prices are required to tempt men to tie up their capital in enterprises when a sudden termination of the war may render much property obsolescent. Besides, there is no calculated profit to determine how high a governmental department can bid for commodities, and experience testifies that prices go to unusual heights, driven by the competition between various departments of the government for a supply of mobile labor and materials smaller than their total demands. Even more important, much valuable time will be lost before the rate of production can properly be synchronized with the military program and the several volumes of the complementary goods necessary to it can be properly adjusted to each other. Since time and economy are of the essence of victory, it is unwise to leave the problem to the caprice of the price-system. Instead a carefully devised program with a clearly defined end seems imperative. This program must aim at a readjustment of an industrial system

which has grown up to meet the needs and whims of a people at peace with the world to the newer demands imposed by war. It must transform an industrial system which involves the materials, processes, and aims of economic life and stretches away from the production of the most elementary of raw materials at one extreme to the habits and fancies of the people at the other.

The food problem has its place as a part of this larger program of adjusting the industrial system to the demands of war. In the various aspects of its readjustment of consumption, production, and distribution of food, it affects profoundly the interests and the efficiency of the people at home and the soldiers at the front. The amount of food which must be produced depends upon the triple demand of the people at home, the civilian population of our allies, and the forces in the field. Its distribution involves numerous and baffling choices between conflicting interests. Its consumption requires the scrapping of the personal habits of a lifetime and the substitution therefor of others formed in the light of military necessity. The character of the program depends upon the duration of the unusual food conditions which have come in the wake of war. It is complicated by the varied fortunes which four years of war have brought to our allies. It is affected by dominant tendencies imposed upon the industrial system which the signing of a treaty of peace cannot soon remove. Because of its intimate association with the larger problem of supplies and its dependence upon peculiar circumstance, a statement of the requisites of a food program must wait upon an enumeration of the antecedents to which it must conform. Therefore it seems best, in the pages which immediately follow, to consider: (1) the situation in Germany with a view to the testimony which it gives upon the duration of the current food situation; (2) the peculiar food needs of our principal allies, Great Britain and France, and of the neutral nations of Europe; (3) the tendencies affecting the production of food which are accompaniments of war; and (4) the peculiar requirements laid upon this country. In view of these it will be possible to outline, not in any adequate fashion, but at least in its main aspects, a food policy for the current emergency.

## II. THE FOOD SITUATION IN GERMANY

The strength of Germany lies in the adaptation of its industrial system to the exigencies of war. The adoption of the machine-technique made possible a large surplus above the industrial output of the more primitive system which it supplanted. But the ruling caste did not allow this to be wasted in competitive consumption or to be dissipated in increasing the several class standards of living. On the contrary economy and frugality were encouraged among the masses to the end that the greatest possible number of men and the largest amount of material might be freed from regular industrial employment or civilian consumption for military uses. Because the whole industrial system was fashioned with that probability in view, little time was lost after the outbreak of hostilities in converting it into a gigantic, complex, and effective engine of war. The policy that whatever was requisite for success in war should be produced at home meant that all the processes necessary to warfare could be carried on within the country. To the end of the largest possible direct participation in war the discipline of the German has stood his government in good stead, for long ago he learned the double lesson of getting the most out of his resources and of accepting discomfort and even less than a decent living without open revolt. The spirit of protest which hunger engenders in other people is likely in Germany hardly to exceed the bounds of personal discontent, for an effective control of schoolroom, press, and pulpit has successfully inhibited the organization of opinion which is a necessary antecedent to effective group action.

In some respects Germany's food situation is better, in some respects worse, than that of the other European belligerents. It has the advantage of not losing sight of the ideal of agricultural self-sufficiency in the four decades immediately preceding the war and of quickly giving its attention to the serious defects in the organization of food revealed in the earlier months of the war. Evidence of attention to this problem is revealed in the statistics of agricultural progress between 1887 and 1913. During this period population increased from 48,000,000 to 66,000,000, or 38 per cent. Yet from 1887 to 1912 the supply of vegetable foods

increased even more rapidly. The production of rye increased from 5,867,800 to 11,012,861 tons, or 97 per cent; of wheat from 2,585,200 to 3,962,390 tons, or 54 per cent; of potatoes from 25,459,200 to 44,220,200 tons, or 72 per cent; of sugar from 991,000 to 2,590,000 tons, or 251 per cent, and of other food articles from 44 to 114 per cent.<sup>1</sup> At the beginning of the war Germany was producing nearly all the grain, potatoes, and sugar consumed in the country. In respect to meats the situation was by no means so favorable, only one-fourth of the beef, one-tenth of the pork, and one-twentieth of the mutton consumed being of domestic production. We have little direct evidence upon the increase of production—or more likely the decrease—since the beginning of the war, though there is an abundance of indirect evidence of all degrees of reputability. This indicates that despite the use of the labor of prisoners and an attempt to use food resources to produce only commodities of the highest food value conditions have been fluctuating from bad to worse, but with a steady drift toward worse. The best evidence seems to indicate that Germany has at best only about 70 per cent of the vegetable food and certainly not more than 40 per cent of the animal food

<sup>1</sup> To guard against inaccuracies due to the yield of unusual years the comparisons in the text are based upon an average of a number of years at the beginning and at the end of the period. The averages are for three, four, or five years, depending upon the length of time necessary to secure a fair statement for each of the crops considered. Because of this the percentages of increase stated in the text are lower than they would be had the first and last years been normal years and had it been possible to base conclusions upon a comparison of them. The use of a period of years applies also to all the other figures of agricultural production given in the text.

<sup>2</sup> It is impossible in the space available here to give a list of all the materials used and authorities consulted in the production of this article. The literature upon the subject of the food problem is voluminous. At present nearly seven hundred books, pamphlets, and magazine articles are available, and the number of titles is rapidly increasing. The great mass of this literature is, of course, worthless, and much of the important material is presented in books or articles which do not purport to deal directly with the food problem. A large part of the material actually used is listed in a select bibliography of the food problem prepared by the writer and published as a bulletin by the United States Food Administration. The reader who is looking for a statement of authorities is referred to that. The articles and statistical tables referred to there, however, contain only the figures upon which are based the calculations which give the figures used in the text, e.g., the statistics of annual production and consumption, from which the averages presented above have been calculated.

regarded as necessary in time of peace. This shortage is important, however, more as evidence of the large part of the population below the subsistence line than of the success of a policy of attrition in bringing Germany to terms.

But other conditions are affecting the food situation for better or for worse. Germany has never been completely cut off from foreign sources of supply. In the earlier years of the war the Roumanian surplus was available for German use, and there is at least the possibility that next year, if not this year, Roumanian wheat will again find its way into Germany. Frequently it has happened that the campaigns in the east or south which Germany has undertaken in the autumn have resulted in the capture of food supplies. Thus last autumn the seizure of a large supply of wheat in northern Italy was perhaps not altogether an accident. Besides, as we now know, the blockade of Germany has been by no means a success, and a great deal of food has poured in through neutral countries. And last, the extension of the German military lines has added to the country much fertile land. Some of this has already been put under cultivation. The greatest promise is the lands in the East which have either been annexed or have been made accessible by the collapse of Russia. The consensus of opinion among those who know the economic East seems to be that these lands will be of little avail this year. Whether they can be made to furnish a large food supply in 1919 or later depends largely upon the ability of the German government to organize the country for the furtherance of its own purposes.

On the whole the outstanding features of the German situation, so far as they affect the food problem, are two in number. The first is that, in view of German discipline, there is little to expect from a policy of attrition. The policy of the Allies may force an ever larger part of the population beyond the minimum necessary to keep health in the body for physical toil, but it is not likely to starve the population into surrender. If the war becomes an involuntary hunger strike, Germany's powers of endurance are likely to exceed those of any Western nation. The German armies may be kept back, the German government may be driven into bankruptcy, the German morale may be broken, a victory over

German arms may be achieved, but it is safe to say that economic inability to fight is not likely to be a cause of German defeat. So long as the losses in men do not greatly exceed the numbers added to the army by incoming classes, and so long as the industrial system is arranged to supply a large number of men for fighting and materials for them to fight with, the German government may, if it wills, keep up the struggle. The second important fact is that no matter how soon peace arrives a serious food problem will remain in Germany for some years to come. The production is low and disorganized, the personnel on the farms is far below normal, both in numbers and in ability, and for many groups the standards have been driven far below what is necessary for efficiency. Both of these facts point to the necessity of a food program which looks farther ahead than a few months—one that looks even to the problems of the production and distribution of food a decade after peace.

### III. THE FOOD PROBLEM IN ALLIED AND NEUTRAL COUNTRIES

At the beginning of the war France was, as it had been for some time, a country of small farms. No less than 45 per cent of the population belonged to the agricultural class. On the eve of the present conflict it was consuming 379,000,000 bushels of wheat, 51,000,000 bushels of rye, 54,000,000 bushels of barley, and 314,000,000 bushels of oats annually. Of these totals 55,000,000 bushels of wheat, 3,000,000 bushels of rye, and 6,500,000 bushels of barley were imported. These and similar figures show that the country was producing approximately 86 per cent of the cereals consumed. A similar calculation indicates that about 85 per cent of the meat supply was produced at home; but in explanation of this figure it needs to be said that in France the normal per capita consumption of meat is only 79 pounds per annum as against 113 for Germany, 119 for Great Britain, and 171 for the United States.

This favorable situation has been radically changed by the war. In the first place, the large percentage of the population engaged in agriculture has caused the draft of fighting men to make larger drains upon agriculture with greater decreases in efficiency than in any belligerent country. In the second place, nitrates for fertilizer

which usually come from Chile have been very hard or almost impossible to get. In the third place, capital has not been available for improvements, depreciation has gone forward at a very rapid rate, and materials which otherwise would have gone into farm machinery have been diverted to war uses. In the fourth place, a very considerable amount of fertile soil has been usurped for military purposes and an even larger amount has fallen into the hands of the Germans.

France has of course resorted to various devices to overcome these tendencies to agricultural decline. The aged and the very young alike have been put in the fields; the labor of men back from the front, of prisoners, and of Chinese coolies has all been used; the production of certain products has been subsidized; and a rigid system of agricultural supervision by prefects has been established. But in spite of all this the supply of food has diminished and is still diminishing. The most reliable computations indicate that nearly, if not fully, 40 per cent of the agricultural area has been lost to cultivation and that the fertility of the most important crop-producing sections has declined by from 20 to 30 per cent. To grasp the significance of this one must note that if France were today to try to maintain its consumptive standards of 1913 it would have to import 60 per cent of its wheat, 48 per cent of its rye, 15 per cent of its barley, and 35 per cent of its oats. This general decrease in the consumption of staple commodities indicates the extent to which standards of consumption have been reduced and how close a considerable part of the population is to actual starvation. Yet the most serious aspect of the situation is that the land and its productive equipment are deteriorating from month to month, and that the tendencies bringing about a decrease are becoming more and more pronounced. Peace will leave France face to face with a serious food problem.

Because of its peculiar industrial organization Great Britain is very unlike France. Economically the British Isles are but the center of a vast industrial system which ramifies to the corners of the earth. It performs a few economic functions for a large part of the world, and other parts of the world perform many functions

essential to the welfare, and even the lives, of the inhabitants of the islands. Most important for our purpose England produces only a very small part of its food supply. Owing no doubt to its gradual development of the machine-technique, the surplus which the machine made possible has gone in large part to maintain higher competitive standards of living. Before the war its normal consumption per annum was far larger, not only in aggregate but per capita, than that of France or Germany. Yet only 3,000,000 bushels of wheat, 4,000,000 of barley, 17,000,000 of oats, and a paltry amount of sugar were produced at home. The small participation in food production indicates clearly enough the necessity under which Great Britain has been placed to keep open at all costs the avenues of maritime commerce. It also indicates alike that the war has decreased very little the food supply of the nation by any direct effect which it has had upon production, and that any increase in production which might be secured by vigorous governmental action cannot affect materially the significant factors in the food situation. In short the national food supply rests upon the double contingency of production in foreign countries and the shipping available for bringing the food to British ports. There is no evidence to indicate that even the countries farthest removed from the seat of the war have escaped the scarcity of materials and implements and the high costs which it has forced upon food production. To make the statement as hopeful as possible we may conclude that none of the countries whence comes the British supplies gives prospect of offering to the warring world a surplus above that available in 1914.

But the crux of the problem is not in production; it is in the shipping situation. The tonnage available for transportation has been greatly diminished by three causes. The first is the diversion of vessels—how large only those in the secrets of the governments can say—to war uses. The second is the large losses through destruction by mines and submarines, losses familiar to every reader of the newspapers. The third is a loss in the number of journeys which a ship can take in a given time, due to circuitous routing to avoid submarines. An attempt has been made to meet the situation by prohibiting the importation of nonessential

commodities. But, in view of the large number of imports for war uses, imports unknown to Great Britain before the war, the places of the nonessentials are filled without supplying sufficient accommodation to take food from the places where it is most plentiful to English ports. Whatever rosy promises ship-building may hold out, at this writing the combined construction in Great Britain and America is not yet equal to the losses caused by submarines. In view of this serious shortage relief can be found only by discontinuing long hauls and concentrating shipping upon routes connecting Great Britain with the countries close at hand.

Such concentration merely solves the immediate shipping problem in terms of another problem of production. It makes the food supplies of South America, Australia, and India less available than they were, and throws an increased burden upon Canada and the United States. This burden becomes the heavier when it is realized that the war has cut off England entirely from some of its important sources of supply. The situation as regards all foods may be clearly set forth in a brief summary of the principal ante-bellum sources of Great Britain's grain supply. Of the total of 11,204,713,700 pounds which was the normal importation at English ports before the war, 16.2 per cent came from Russia. Early in the war the closing of the Bosphorus prevented importations from Southern Russia where the great wheat fields lie, and more recently internal disorganization has stopped shipments from the northern part. The import of 206,563,500 pounds, or nearly 2 per cent of the supply, from Roumanian sources has ceased, while the cessation of imports from Austria, Germany, Italy, France, and the neutral countries adjacent has cut off another 4 or 5 per cent of the supply. Argentina used to furnish 1,487,082,200 pounds, or about 14 per cent of the total, and India and Australia smaller amounts. The supply from Argentina can now be obtained only by using scarce and expensive shipping facilities, and that of India and Australia, because of the almost prohibitive cost of carriage, is beyond reach. There is little likelihood that ships will be available before the war is over in sufficient number to allow a resumption of the old routes of trade and a tapping of the old sources of supply. On the contrary there is every reason for

believing that Great Britain will have to depend upon the nearer sources of supply, particularly upon Canada and the United States, for many years after the coming of peace.

What is true of the seriousness of the food situation in France and Great Britain is true, in their several degrees of the smaller belligerent countries, of their neutral neighbors, and even of non-participating nations far removed from the scene of combat. The great food-producing area is the northern temperate zone, the inhabitants of a large part of which are engaged in the present struggle. The southern temperate zone is of secondary importance. The arctic zones produce only enough for their indigenous populations, and the tropics do not yet produce enough of the staples to satisfy their own needs. Like Great Britain these countries, even though they lie within the great food-producing areas, are not self-sufficient. Italy and Spain, despite great home production, are large importers of grain, and Holland, Denmark, Norway, Sweden, and Switzerland are quite dependent upon imports.

It is characteristic of the war that the great dearth in the good things of life which the diversion of labor, materials, and land to other uses has caused has afflicted neutral as well as belligerent nations. The prices of the essential commodities are relatively steady the world over. A scarcity in one country, due to the war, causes prices to rise, and the higher prices attract goods from other countries in which prices are lower. The movement continues until prices in the exporting country rise enough to make sales abroad unprofitable. In this way countries which scrupulously keep the peace have to share the dearth of nations at war. Conditions alike among the smaller warring nations and among the neutrals indicate that they have their several food problems, problems which are likely to remain acute even after peace is made.

#### IV. FORCES RESPONSIBLE FOR THE FOOD PROBLEM

It seems unnecessary to elaborate at length the abstract principles which explain the decrease in food production and the emergence of a food problem in the wake of war. Many of the forces responsible for the problem are clearly apparent in the presen-

tation of the situation in France and Great Britain given above. Others are familiar to any student of the nature of modern warfare. A few words of abstract statement must suffice.

The first of two general groups of forces which reduce food production in time of war operate directly upon agriculture. Of this group the first and most obvious is the decrease in number and the decline in efficiency of agricultural laborers. Large numbers are drafted for the army who are habituated to farming just at the ages at which they are most efficient. The old men, the women, and the children who take their places are their equals neither in physical efficiency nor in their knowledge of agricultural methods. Nor can prisoners or imported laborers, who are worked in gangs under supervision by a system which contains many of the devices of slavery and lacks the incentive to efficiency which the free laborer has, be depended upon to secure really satisfactory results. To this depletion must be added the additional host who are drawn to industrial occupations by the lure of high wages paid in establishments engaged in war work. This drain is likely to be very severe in a country which in the past has depended for an urban labor supply upon a stream of immigrants which is now stopped. The scarcity of food among agricultural laborers, the lack of medical attention which comes with war, and the withdrawal of the comforts of peace further lowers efficiency and in turn food production.

The second of this group of forces directly lowering food production is the increasing difficulty of getting the materials which successful farming requires. If fertilizers are imported, war renders them difficult or impossible to procure. If they are of domestic origin, they have to take their precarious chances of transit upon a railway system which is being reorganized to accommodate itself to the expeditious movement of munitions of war. Farm machinery, like the soil, is constantly wearing out, and neglect and misuse, the inevitable accompaniments of management by amateurs, make the rate of obsolescence or depreciation a very high one. New machinery to take the place of that which has been scrapped is at best expensive, because it is made of the very productive elements out of which most munitions of war are made. Moreover, the supply of raw materials may be so limited as to allow little

if any of them to find their way into agricultural implements, or it may be that a shipping board puts them far down on the list of priorities of imports. It is also usually impossible for the farmer to pay cash for machinery, and borrowed capital is hard to obtain in war time, owing to the direct competition of the government which floats loans large enough to absorb nearly all the free capital.

In the third place the high prices which follow soon after the declaration of war give rise to great waste. Tempted to make profits while the making is good, the farmer is likely to sell even the produce which he would ordinarily keep for seed, trusting to buy in the spring at a lower price. More important still is the depletion in herds, where the increase is slow—a depletion that may cause scarcity for years to come. At present the supply of animals needed for breeding purposes in the United States and Canada, as well as in most European countries, has been reduced almost to the danger-point.

In the fourth place bare mention may be made of the huge quantity of land usurped by the modern battle front, the tendency on some fronts for the line to sway back and forth, and the destruction not only of current crops but also of orchards that only years will replace. An occupation of territory by an enemy, followed by his withdrawal, leaves behind a trail of destruction of buildings, fences, machinery, and equipment, and a desolate area of gullied and shell-strewn earth.

The second general group of forces reducing food production includes conditions which have their effect upon the whole industrial system. In the large they resolve themselves into an increase in the risk and uncertainty which accompanies business enterprise. They include capricious changes in prices, sudden changes in the industrial policy of the government, the inability to determine in advance the real effects of price control, the uncertainty about the duration of the war and what will follow it, and other major and minor forces of dissension. These are but manifestations of the general disarrangement which necessarily accompanies an adjustment of the industrial system to new conditions. The losses involved in adjusting men, materials, processes, and habits to new ends are fairly clear to anyone who has seriously thought about the

problem of the relationship of industry to war. Their extent and nature form a subject much too large and complex to be discussed here.

In passing it is of note that this disorganization is international as well as national. In fact the more a nation has depended upon others, the more likely it is to be seriously crippled by an attempt to meet new conditions. This disorganization cuts down the productive efficiency of the peoples who are not at war. We all know that in general goods are produced in the localities where favorable conditions make costs lowest, and that through a world-wide division of labor nations satisfy each other's wants. It has come about that the countries of Western Europe have specialized in the production of manufactured articles and have come to depend upon Russia, the Near East, the French and English colonies, and the two Americas for their raw materials and a large part of their food. In general, industry and business have been arranged upon the assumption that normal markets and means of communication are to remain open. By seriously crippling the communication upon which the division of labor depends the war is making more expensive specialization between nations. It takes away markets, increases the costs and makes difficult of purchase the materials essential to production, and robs of its effectiveness the contribution which the international organization of industry makes to the economy of production. Out of such maladjustments in economic organization comes a loss in economy of effort and in the use of resources which affect, along with the complementary processes of the industrial system, the sequence of acts which culminates in the production of food.

#### V. THE BURDEN PLACED UPON THE UNITED STATES

The argument above points to a serious shortage of food and a grave food problem which are likely to be with us until the end of the war. It gives no definite promise that this problem will be less acute or even that it will not be more menacing in the future. It points clearly to the United States as the country which must bear the brunt of the task of feeding the Allies. How great this task is and what the resources are with which it must be faced a brief survey of the situation will indicate.

As we have seen, even under peace conditions, Western Europe does not produce enough of the staple commodities to satisfy its wants. In respect to cereals France alone (unless Germany be included in the count) approaches self-sufficiency, and even it has to import the bulk of its supply of meat. To recite the list of our allies in the present struggle, or to name the nations which are not our enemies, is to present a catalogue of peoples who are seriously in need of subsistence. England, France, Italy, Belgium, Portugal, Spain, Switzerland, Denmark, Holland, Norway, and Sweden are in their respective degrees in need of all the food they can get. So far as supervision, regulation, and skilful devices can be made to work, waste has been eliminated throughout Western Europe; yet, for all that can be produced or imported, the supply falls short of the barest needs. In Italy and England, for instance, the consumption of sugar has been reduced to one ounce per day for each person, while for months the French have had even less. To take wheat, which is fairly representative of the range of staple commodities, an extremely conservative estimate places the needs of our allies for the current year at a surplus of 470,000,000 bushels of wheat and 550,000,000 bushels of other cereals above domestic production. Of this amount Canada can possibly furnish 120,000,-000 bushels of wheat and 100,000,000 bushels of other cereals. For the remainder of the surplus the United States is the only accessible source of supply.

It need barely be mentioned in passing that scarcity is inevitably associated with high prices. While a great many ingenious devices have been used to keep prices down, the efforts of European governments have by no means been successful, and the prices which have official sanction are far in excess of the usual prices of peace times. High prices make food increasingly hard to get with increasing degrees of slimness of the pocket-book. The result is that a very large part of the population, of belligerent and neutral countries alike, are not getting enough to make them productively efficient and that no inconsiderable part of them are becoming an easy prey to disease. It is a situation of actual and potential famine in all of Western Europe which the United States is called upon to face.

It is hard for us to realize that the United States is much less favorably situated for producing a huge food surplus than it was thirty years ago. In the interim industrialism had made huge strides in the land and a great urban population has arisen to eat up a large part of the surplus of food produced by the farms. This change is indicated by a growth of the urban population in the twenty years from 1890 to 1910 from 22,720,223 to 42,625,383, or more than 80 per cent, while rural population during the same period increased from 40,227,491 to 49,348,883, or less than 25 per cent. If the same ratios have been maintained since 1910 urban population has now become one-half of the whole. In terms of food production decidedly more than one-half of our population now produces a very insignificant part of the food which it consumes, for the rural population includes all who live in towns of less than 2,500. The significance of the change is indicated by the following figures of the production, export, and consumption of typical food products. The comparison is between the average of the five-year period ending in 1895 and that ending in 1914. The average production of wheat per year for the former period was 476,678,000 bushels; for the latter 697,459,000 bushels, an increase of 46 per cent. Between these periods domestic consumption increased from 310,107,000 to 588,492,000 bushels, or about 90 per cent, while exports decreased from 166,571,000 to 104,945,000 bushels, or 37 per cent. The average production of corn for the former period was 1,602,171,000 bushels; for the latter 2,752,372,000 bushels, or an increase of 72 per cent. Consumption increased from 1,552,003,000 to 2,790,962,000 bushels, or 79 per cent, while exports decreased from 50,168,000 to 41,509,000 bushels, or 17 per cent. The figures upon sugar, beef, pork, and other staples lead to similar conclusions. The growth of industrial centers has given us an increasingly urban population which has been consuming a larger and larger part of the food surplus.

Our primary concern, however, is with current production and current consumption. Taking the leading food products we note that while in 1915 the production of wheat increased to 1,025,801,000 bushels, of which 332,465,000, or 37 per cent, was exported, the yield fell to 639,000,000 bushels in 1916, and the estimated

yield for 1917 is only 656,000,000 bushels. Our current normal consumption is about 575,000,000 bushels, leaving only about 80,000,000 bushels of wheat to be exported, if we continue the prodigal waste of the days before the war. The yield of corn for 1917 is estimated at 3,248,000,000 bushels, an increase of 495,-628,000 bushels, or 18 per cent, over the average yield of the five years preceding the opening of the European war. Our crops of barley and rye, aggregating respectively 204,000,000 and 56,000,000 bushels, are not of a size to add appreciably to our surplus of food cereals. Like the corn crop, the crop of oats last year was particularly large, aggregating 1,533,000,000 bushels. These figures indicate that the great increase has been in corn and oats, cereals upon which neither we nor the Europeans have been depending for bread.

A very early estimate places the winter wheat crop for the current season at about 600,000,000 bushels, and indicates that the acreage devoted to spring wheat has increased 15 per cent over last season. These figures, promising as they are, do not indicate a yield at all large enough to dispose of the problem. In interpreting them it must be remembered that these figures are based upon acreage, and that the winter wheat crop was put in before the draft and the munition industries made their heaviest drain upon agricultural labor, and before the farms suffered from a dearth of machinery and capital due to a diversion of supplies to war industries.

For a time after the beginning of the war the domestic production, or more properly the marketing, of meat increased materially. This is evidenced by an increase in our exports of meat (excluding pork) from 493,848,000 pounds, which was the average for the three years before the war, to 1,339,193,000 pounds for the year ending June 30, 1916, or about 190 per cent. But the figures lose their significance when we remember that before the war Western Europe received only a very small part of its meat from the United States and that the last figure is small when compared with our export of wheat or with the meat annually consumed at home. Yet there is abundant evidence from all parts of the country that stocks are being seriously depleted and that the dearth of breeding animals

will prevent so large an annual slaughter in the immediate future. Taken together these figures indicate the nature and magnitude of the problem of economy in consumption, as well as a complicated problem in production, which we have to face this season, and perhaps for some seasons to come.

But our concern cannot stop with so short-sighted a consideration of the problem. If the war is to go beyond the present year we need to make our plans with that contingency in mind. If it stops within the year its effects upon the production of food cannot be immediately halted and the food problem will remain acute for some time to come. It is possible, of course, that without sacrificing the acreage of any crop, or interfering with the production of any commodity, we may increase our production of staple commodities. It has been said that the application in this country of the technical knowledge of agriculture that is available would provide the world with all the food it requires. But the trouble is that this knowledge cannot be quickly applied. Certain factors oppose a direct increase in the total food output. The inertia that clings to traditional methods is strong upon us. Just as inability to break habits may lead an individual to death, so an inability to depart from traditions may lead a nation to defeat. The available labor is smaller in quantity this year and less acquainted with agricultural processes than that used last year. There is a prospect that an increase in the size of the army will make still further inroads upon agricultural labor and will leave man power seriously depleted. Everywhere men are leaving the farms to become industrial laborers in establishments which have contracts for the production of materials of war. Since industries turning out non-essentials have not been closed, they have been supplying little of this extra demand, and the brunt of it is falling upon the farm laborers who can hardly be spared. When we note that the volume of immigration which for some years hovered about 1,000,000 per year has fallen to a paltry 300,000 we can see how great the demand for urban labor is. It is possible that a more extensive use of machinery may make up at least in part for this decrease in labor supply. But the capital necessary for purchasing machinery cannot be easily had, since the supply is limited and the

demands of the government are unprecedented. The increase in the rate of interest is causing land values to advance at a lower rate than food prices and this discourages investment at a high rate of interest. Besides, the demands upon our iron and steel industries for munitions of war alone are fully as large as their total output under peace conditions, a fact that indicates all too well the scarcity and high prices of farm machinery when the war is once under way.

Here, as always, we must remember that the productive elements out of which society must fashion its goods are limited, and that labor, materials, and equipment can be put to one, and to only one, use. Except for the land itself, there will be less of all of the elements of agricultural production than there was before the war. Total product may be somewhat increased by using better methods and superior knowledge. But this increase cannot make up for the deficit due to the causes enumerated. The supply of staple commodities can be increased only by devoting to their production the resources used in the past to produce other products.

#### VI. THE BASIS OF A FOOD POLICY

The analysis of the conditions out of which springs the food problem makes evident the principles which must dominate its solution. The pages above indicate that for many years to come the United States must either produce or save a large surplus of the staple food commodities above the needs of its civilian population. This can be accomplished by, and only by, diverting food and the stuff of which it is made from ordinary peace uses into this surplus available for our military forces and our allies.

The food problem, like all the great supply problems, can find a genuine solution only in a consciously formulated policy of diversion. Despite the conclusive proof which England and France have alike offered, that war, which is the most unusual of all businesses, can be carried on only if its requirements are made the dominant end of the industrial process, some well-meaning individuals still persist in the notion that business may be carried on as usual. They seem to think that in addition to the large and conglomerate volume of the good things of life which will allow luxury as usual

and pleasure as usual, an additional supply can in some magical way be conjured up to supply the requirements of the armed forces. It is argued that the stimulus of war enables the productive system to increase its output by taking up the "slack." In support of their belief perhaps it can be said that there have long been, and still exist, abundant opportunities of increasing production by the use of new lands, new technique, new organization, new governmental supervision, and the added labor of those who once lived in idleness. While it must be admitted that war has taught the people of Europe many things about efficiency which five years ago seemed beyond their grasp, it has given no evidence of being able to add to the ordinary total production materials of war which constitute fully a 35 per cent addition to the volume of goods turned out.<sup>1</sup>

All the slack in our industrial system was taken up by the immediate stimulus of the European war in 1914 and 1915. It must also be remembered that efficiency comes only with the adaptation of the system to its new ends and cannot become very manifest until this process is well under way. Our recent experiences in the production of aircraft and ships, although based upon sound enough business principles as applied to peace conditions, can be characterized as dismal industrial failures. They are evidence of the waste which is a persistent, perhaps an inevitable, accompaniment of an enterprise into large-scale warfare by a nation of amateurs in knowledge of industrial society. The experimentation which is necessary to learning how to do the great tasks of war carries with it many such wastes. Many other wastes incident to the withdrawal of men and materials from industry have been recounted in the pages above and require no repetition here. In view of these conditions it seems fairly safe to say that war decreases rather than increases the total output of a nation. Certainly there is little evidence for a belief in a rising total output in a nation in which the industrial system has been organized to respond to public demand through the agency of a scheme of prices. But even if, in

<sup>1</sup> It is of course manifestly impossible to tell exactly the ratio borne by the aggregate of goods required for war purposes to the total of the technical product of the country. The estimate above is based upon a comparison of the expenditures involved in the annual war budget with the most reliable estimates of the value of the total product of American industry last year.

spite of losses and disorganization, production is to increase, this can come only after an adjustment to the new conditions is complete, and even then it promises at most an addition of only a small part to the total product of the country out of which must come the great supplies of a modern belligerent enterprise.

The general surplus of supplies which a civilian population must produce over and above its requirements, of which the food surplus is a single case, can be secured only by a policy of diversion. Since the resources in land, capital, and labor, under a given organization and technique, are limited, and tend to be decreased, new supplies can be had only at the expense of old ones. This diversion of economic resources to national purposes may be either direct or indirect. It is direct when consumers give up goods which immediately satisfy military demands, as for example bread which can be used to feed soldiers. It is less direct when the public abstains from purchasing an article which cannot be used, but the materials out of which it is made can be used, to produce a different article adapted to war uses. A case in point is that of automobiles, the materials of which can be converted into army trucks. The diversion is even more indirect when it occurs at an even earlier stage of the productive process, as for example when steel is diverted from structural uses in bridges and skyscrapers to submarine destroyers. From this it is evident that at earlier stages of the industrial process the limited amount of labor, machines, and other productive resources is more fluid, and therefore more easily diverted, than at the later stages. For a short war, to be fought upon a small scale, sufficient materials may be got by a diversion to war uses of goods which are intended for ordinary consumption. For a longer one requiring larger operations this source will be insufficient, and it will be necessary to go farther back and force unfinished goods into forms adapted to military ends. For a modern war of the first magnitude goods cannot be obtained in sufficient quantities and many goods cannot be got at all unless productive energy is diverted to new uses at an early stage of the productive process when it is still unspecialized and fluid. It is necessary to add that because our productive processes are long ones the adaptation of the industrial system as

a whole to the demands of war requires a carefully thought-out plan and no little time for its execution.

In respect to their ability to meet the demands of war nations may be divided into two classes, those whose industrial systems have been established with the possibility of war clearly in mind and those which have been contrived to meet no such end. In the former case in time of peace standards of living are kept low, thus limiting the amount of resources used in producing goods for personal use and leaving a large amount capable of being put to war uses. Further, in devising machines, in establishing plants, in arranging industrial establishments into a system, the alternative of military use is kept always in mind. Under such an arrangement a large volume of the materials of war can quickly be produced with small waste in conversion to new uses. In the other type of nation, on the contrary, productive energy is allowed to be spent upon the goods which meet the uses or fancies of those able to purchase them. No deliberate effort is made to save for national exigency a large share of the limited productive resources by keeping standards of living down, and machines, industrial plants, and the economic system have not been aimed in their growth at a rapid and easy conversion to unwonted uses. Under such arrangements it is with difficulty, with great loss of effort, and very slowly that the industrial system can be rearranged to meet the new ends.

In the present crisis our nation belongs to the second type, as did all of our allies at the beginning of the war; our antagonist has the military advantage of the first type of establishment. Furthermore, thus far we have relied quite largely for the diversion necessary to an adequate supply of war materials upon voluntary effort, while the enemy has used compulsion and definite design to divert productive resources to predetermined ends. To solve our problem adequately productive materials in their earlier and more fluid forms must by governmental order be turned to the production of war materials. In this case consumption can be restricted by the sheer inability of consumers to purchase the unnecessary articles with which they have hitherto loaded down their productive budgets. Failing such compulsion a rigid moral effort, directed

by intelligence and not by emotion, must be relied upon for a reduction of our consumption of the comforts and vanities of life. If by this latter means their market is taken away, producers will be forced to devote their resources to national uses.

Thus the diversion of productive resources to public ends requires of each of us a voluntary or compulsory rearrangement of individual and household budgets and radical changes in the habits of our lives. We must encourage direct diversion by reducing to a minimum our consumption of articles which can be used by our soldiers. But it is even more important that we give up the consumption of nonessential things in order that the productive energy which they embody be devoted to the accomplishment of the purpose in hand. The amount which we are forced to give up or voluntarily surrender constitutes a surplus over private consumption that measures the extent of our ability to wage war. We are fighting a nation which continues to be willing to reduce private consumption to the barest subsistence minimum. Unless a large surplus is produced we can gain no active participation in war and cannot hope for a victorious peace. The larger the surplus the shorter the war will be, and the nearer we are to victory.

#### VII. THE ESSENTIALS OF A FOOD POLICY

The general principles sketched above for the production of the supplies necessary to warfare apply to the food problem. Their translation into terms of the latter problem is easily made from the foregoing argument and requires a bare mention in conclusion.

First and most obvious is the obligation which the food problem imposes upon the consumer. Within the last year it has become a truism that we can all contribute to a military victory by abstaining from the over-consumption and waste of commodities like wheat, meat, and sugar, which without change of form can be used by our soldiers and our civilian allies. As yet it is not so clearly appreciated that many of our expenditures upon food get their necessity from social convention rather than from bodily need or physical or mental vigor. Before the war the consumption of food, both in quantity and in the wasteful methods of its prepara-

tion, was affected quite largely by a desire to do the proper thing. A great saving may be effected by keeping in mind the principle that the selection of articles for consumption must be based upon their food values rather than their customary positions in the dietary or social budget. More recently we have been trying to save staple foods for war uses by substituting for them other foods diverted from less important uses. As an immediate necessity much can be said in favor of this policy, provided the substitutes can be made to yield the food values which inhere in them. But as a part of a long-time program this is of doubtful wisdom, since the alternative is present of using the resources embodied in these substitutes to turn out products more in keeping with the conventional standards of American culinary technique.<sup>1</sup> While these and similar measures may be quite proper and fit so far as they go, they do not afford a solution of the food problem. They are based upon immediate considerations, overlook the period of several years during which there is every probability that for the Western world the problem will remain a serious one, and assume that the problem is limited to consumption. They constitute an attempt to solve the problem out of existing stocks of food. At best such a short-sighted policy will yield a bare minimum that will hardly tide the peoples of the allied countries through an emergency. It will not give them the supply of food which is necessary for health, for industrial efficiency, and for a vigorous population in the next generation.

<sup>1</sup> In this connection the reader probably recalls an order of the Food Administration requiring the purchaser of wheat products to purchase an equal number of pounds of bread materials made from other grains. Even as an emergency measure this order has two serious shortcomings. It makes possible the purchase of all the wheat flour desired by those who can pay a price equal to the price of the flour plus the price of the substitutes. Such individuals may turn the substitute to unimportant or wasteful uses or may not use it at all. It also leads to a great deal of waste on the part of earnest housewives who are anxious to help conserve food but whose kitchen technique comprehends no use of these substitutes. Almost any reader can testify to the many cases of waste due to each of these practices. As a long-time proposition the expediency of this rule must lie in a comparison of the waste attaching to the non-use or wasteful use of substitutes as compared with the smaller amount of food value produced by given resources when directed to the production of wheat than to the production of these substitutes. This conflict of values can be definitely settled only by the dietary, the culinary, and the agricultural experts.

Second is the burden which the food problem imposes upon the producer. It is his duty to see to it that his limited resources are used in such a way as to turn out products of maximum food value in comparison with the resources which have gone into them. Since huge quantities of staple products are required, he must not give his time, the labor of his men, his fertilizers, the use of his invested capital, and the properties of his soil to the costly production of fancy vegetables and meats which are intended to tickle the palate of the dietary aesthete. Under present conditions a non-regulated price system is not a proper guide to agricultural production. It has the double failing of leading too many people to produce articles which in the previous system have commanded high prices, to the end that the quantities of staple commodities are not properly apportioned, and of allowing the production of articles to suit the whims of those who can afford to pay. While it seems necessary to insure prices high enough to tempt farmers to produce, these prices to be effective must be carefully regulated. To the end of proper production the consumer can help the producer by refraining from buying unnecessary food products at prices attractive to the latter and thus tempting him to a wasteful use of resources.

But the real solution of the problem calls for a positive policy on the part of the government. By absolute prohibition, or by a denial of the use of essential materials, the state must see to it that food resources used in the production of nonessential food commodities be diverted to the production of essential commodities. But even more is necessary. The proper solution of the problem requires supplies larger than such makeshifts can offer. The government must see to it that where possible machinery is forthcoming to take the place of the labor which has gone into the army. It must divert capital from nonessential industrial uses to essential agricultural uses. And where a labor shortage threatens production it must see that an adequate labor supply is found. In resources of the soil the United States lacks nothing; the function of the state is to see that the auxiliary materials are forthcoming and that food be increased even at a sacrifice of nonessential industries.

Third is the burden which is placed upon the state to supervise the proper distribution of food. It must find principles for settling the claims between the civilian populations of our allies, our armies, and the civilian population at home. In addition the problem of distribution between the individuals which make up each of these groups is a difficult one. Fortunately only the last of these devolves upon those who are responsible for the national food policy. Even the bare outlines of the solution of these problems of distribution would require a great deal more space than this article occupies, and here it must be dismissed with a word. Economic theory and actual practice alike attest the possibility of the solution of these problems by authoritative regulation, including price-fixing. But it is safe to say that no authoritative policy can hope to succeed if it be formulated in ignorance of the nature of the price system and of the relation of particular prices to economic conduct.

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